

REMARKS

Claims 1-8 and 10-20 are pending, with claims 1, 10, and 16 being independent. Claims 10-20 are added by virtue of this Amendment. Claims 1, 3-5, 7, and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,774,378 to Yang (Yang). Claims 2 and 6 have been indicated to contain allowable subject matter. Claims 6 and 7, as well as the drawings and abstract, have been objected to. Claim 9 is cancelled (obviating objections thereto).

Applicant thanks the Examiner for indicating the presence of allowable subject matter in claims 2 and 6. By virtue of this Amendment, Applicant submits that the Examiner's objections to claims 6 and 7, as well as to the drawings and abstract, have been addressed. In particular, Applicant notes with the respect to the drawings that the Examiner indicated the absence of an illustrated actuator, and requested inclusion of such an actuator(s). In response, Applicant notes that Figure 4 is a block diagram, and that a more specific and detailed example of Figure 4 is illustrated in Figure 6 and includes illustration of several actuators. Nonetheless, Applicant hereby amends Figure 4 to illustrate an actuator, and amends related portions of the description accordingly.

Regarding the pending rejection of claims 1, 3-5, 7, and 8 based on Yang, independent claim 1 recites, in pertinent part and with emphasis added:

A multi-level (hierarchical) process monitoring system comprising a process monitoring unit ... and a plurality of sensors ... said monitoring unit being so arranged as to monitor the outputs of the sensors and to identify any significant apparent change in the process conditions **based on a comparison of an overview of said sensor outputs with reference information**, and on detection of an apparent significant change, to request additional status information from at least one of the SEVA sensor/s to determine whether the apparent change is in reality due to a change in the characteristics of a particular SEVA sensor rather than an actual significant change in the process conditions.

In rejecting claim 1, the Office Action refers generally to column 4, line 45 to column 5, line 15. However, neither this portion of Yang, nor any other portion, discloses or properly suggests the claim features recited above.

In particular, Yang discloses at column 4, lines 49-53 that "... when a measurement has exceeded ... a pre-determined limit, transmitter 24 (of sensor 12) can send alarm data 35 ... to indicate the severity with which the (process) measurement has deviated from the predetermined value." In contrast with claim 1, this comparison is of one sensor signal with a maximum measurement level. Moreover, the comparison is performed at and by the transmitter 24. Still further, a result of the comparison is an alarm signal, and not related to any determination by data control system 16 of Yang of "... a change in characteristics of a particular SEVA sensor (from among the plurality of sensors)," as claimed.

In the latter regard, Applicant notes that Yang discloses that "... upon a request by data control and management system 16, transmitter 24 provides detailed diagnostic information 34 about the status of sensor 12" (column 4, lines 46-49). However, again, Yang does not disclose or properly suggest that such a request is caused by "a comparison of **an overview** of said sensor outputs with reference information," or that, in response to obtaining the diagnostic information, the control system 16 "... determine(s) whether the apparent change is in reality due to a change in the characteristics of a particular SEVA sensor (of the plurality of sensors) rather than an actual significant change in the process conditions."

In short, Yang discloses a SEVA sensor(s) 12 that provides information to a central control system 16, so as to better utilize actuators 20. Even if the control system 16 enables information sharing between individual sensors 12 and/or performs diagnostic testing of a particular sensor(s) 12, Yang does not disclose or properly suggest that the control system 16 has the characteristics of the process monitoring unit of claim 1. That is, Yang does not disclose a process monitoring unit that compares information compiled from an overview of a plurality of sensors to reference information, and that thereby distinguishes between a malfunction of a particular (one of the) sensor(s) and an actual process change.

As disclosed, the above-discussed features of claim 1 are particularly instrumental in a process utilizing a large number of sensors, many of which may be SEVA sensors. For example, it is disclosed that many "processes require ... a large number of sensors (and that prior art control) systems (can not) fully utilize the metrics of the SEVA measurements" (see Specification, page 3, lines 1-23; in particular, lines 8-12). In contrast, using disclosed techniques, "it is possible to identify abnormalities which would not otherwise be evident" (see

Specification, page 9, lines 24-26), even when a large number of SEVA sensors are implemented.

Since Yang does not disclose or properly suggest the claimed "comparison of an overview of said sensor outputs with reference information," it follows that Yang does not disclose or suggest that the overview is obtained using a multivariate statistical analysis (see, e.g., claim 4), or that the reference information is obtained using a model and/or historical data regarding the process (see, e.g., claim 5).

Independent claim 10 recites, in pertinent part:

- analyzing the first sensor signal and the second sensor signal at a control unit to determine apparent status information related to the process;
- comparing the apparent status information with reference data to obtain comparison information; and
- obtaining sensor status information related to the first sensor, in response to the comparison information.

Independent claim 16 recites, in pertinent part:

- a process monitor having access to sensor reference information and operable to analyze the first measurement and second measurement to obtain an apparent process status, and further operable to compare the apparent process status with the sensor reference information so as to distinguish between a sensor malfunction and an actual process status.

As can be seen from the discussion above, Yang does not disclose or properly suggest these features. As a result, Applicant respectfully submits that all of independent claims 1, 10, and 16 are allowable for at least the above reasons, so that dependent claims 3-8, 11-15, and 17-20 also are allowable for at least the same reasons. Since claims 2 and 6 have already been indicated to contain allowable subject matter, Applicant submits that all claims are in condition for allowance, and such action is requested in the Examiner's next official communication.


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Respectfully submitted,

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